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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

REFAI, RAMSEY

ART UNIT

PAPER NUMBER

3627

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/811,158	SREENIVASAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ramsey Refai	3627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/12/07</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

Responsive to Requested for Continued Examination (RCE) filed April 14, 2008. Claims 1-3 have been amended. Claims 1-17 remain pending.

### *Response to Arguments*

1. Applicant's arguments have been fully considered but they are not persuasive.
  - In the remarks, the Applicant argues that Frank et al fail to teach claims 5, 9, or 14, which recite “wherein the coordinator node comprises *a longest running node in the plurality of nodes*”
  - In response, the Examiner respectfully disagrees. Frank et al teach that the first node that joined the cluster is selected as the coordinator node (**column 7, lines 21-27**). This meets the scope of the limitation, which was interpreted as the node running the longest *in the cluster* based on the description on page 25 lines 20-24 which describes the coordinator as being “oldest node *in the cluster*”. Additionally, in view of the Applicants’ arguments, the limitation “the longest running node” *as argued* now appears to lack proper support in Applicants’ disclosure. Clarification of proper support is requested.

### *Specification*

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1-3 include the limitation "*a proposal message including data defining a plurality of relationships between the plurality of nodes*" which lacks proper support in the Applicant's disclosure and appears to be new matter. There appears to be no clear support in the disclosure for the proposal message including data defining a plurality of relationships between the nodes. Claims 5, 9, and 14 include the limitation "*a longest running node*" appears to lack proper support in the Applicant's disclosure and appears to be new matter. Claims 4, 6-8, 10-13, and 15-17 depend from the above claims and are rejected for similar reasons based on their dependencies.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Frank et al (U.S. Patent No. 6,532,494).

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7. As per claim 1, Frank et al teach a computing system comprising a plurality of nodes connected by a network wherein the plurality of nodes include a group membership service (**column 1, lines 30-45, Fig 3, Fig 1; nodes in a cluster group**) operable to determine membership in a group formed by the plurality of nodes of a process executing on a node in the plurality of nodes for an application distributed across two or more of the plurality of nodes said membership communicated between the plurality of nodes in the network (**column 4, lines 49-67; distributed application**) utilizing a proposal message sent by a coordinator node for receipt by each node in the plurality of nodes and a commit message sent by the coordinator node to each node in the plurality of nodes after receiving acknowledgement that the proposal message has reached each node of the plurality of nodes (**column 5, lines 44-62, column 2, lines 5-13; if a node fails to receives heartbeat messages from its previous node, a reconfiguration message is then send by that node to all other nodes; once all other nodes acknowledge their existence in the group, the node membership is once again reconciled**), and further wherein the plurality of nodes communicate with each other to detect as failure on a first node of the plurality of nodes and to transfer applications from the first node to other nodes of the plurality of nodes in the group on detecting the failure (**column 1, lines 30-40, column 2, lines 5-13; failover**).

Frank et al teach the heartbeat message is used to inform other nodes that the node sending the message is a member of the cluster (**column 1, lines 66-column 2, lines 15**) but fails to explicitly teach the message includes *data defining a plurality of relationships between the plurality of nodes*. However, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify Frank et al to include this feature because doing so would inform the other nodes of the sending node's memberships in situations where there are multiple cluster groups within the plurality of nodes.

8. As per claims 2 and 3, these claims contain similar limitations as claim 1 above, therefore are rejected under the same rationale.

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9. As per claim 4, Frank et al teach wherein the plurality of nodes includes an initiator node to send the proposal message to the coordinator node (**column 5, lines 44-62; no ACK to heartbeat message sent by the node is received from failed node**).

10. As per claim 5, Frank et al teach wherein the coordinator node comprises a longest running node in the plurality of nodes (**column 7, lines 21-27**).

11. As per claim 6, Frank et al teach wherein the plurality of nodes are arranged in a network ring, the order of the plurality of nodes in the network ring being defined by a cluster membership age of each node in the plurality of nodes and wherein the coordinator node forwards the proposal message to a first node of the plurality of nodes, and wherein the proposal message is forwarded by a receiving node in the network ring to a successor node of the receiving node (**Fig 3, column 5, lines 31-43; message are sent in a loop from a previous node to a next node**).

12. As per claim 7, Frank et al teach wherein the coordinator node issues the commit message upon receiving the proposal message from a non-initiator node in the network ring (**column 5, lines 44-62, column 2, lines 5-13; once other nodes verify group membership by exchange of messages; group membership is reconciled**).

13. As per claim 8, Frank et al teach wherein communicating the proposal message includes sending by an initiator node the proposal message to the coordinator node (**column 5, lines 44-62; no ack to heartbeat message is received from failed node**).

14. As per claim 9, Frank et al teach wherein the coordinator node comprises a longest running node in the plurality of nodes (**column 7, lines 21-27**).

15. As per claim 10, Frank et al teach, further comprising:

arranging the plurality of nodes in a network ring; forwarding by the coordinator node the proposal message to a first node of the plurality of nodes; and forwarding by the first node to a next node

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in the network ring (**Fig 3, column 5, lines 31-43; message are sent in a loop from a previous node to a next node**).

16. As per claim 11, Frank et al teach wherein the coordinator node issues the commit message upon receiving the proposal message from a non-initiator node in the ring (**column 5, lines 44-62, column 2, lines 5-13; once other nodes verify group membership by exchange of messages; group membership is reconciled**).

17. As per claim 12, Frank et al teach wherein upon receiving the commit message a node of the plurality of nodes in the network ring performs the tasks of caching the commit message; forwarding the commit message to a next node in the network ring; upon completing forwarding the commit message delivering the commit message to each process of a process group on the node (**Fig 3, column 5, lines 31-43; message are sent in a loop from a previous node to a next node. The use of caching is well known when communicating data to another node**).

18. As per claim 13, Frank et al teach wherein communicating the proposal message includes sending by an initiator node the proposal message to the coordinator node (**column 5, lines 44-62; no ack to heartbeat message is received from failed node**).

19. As per claim 14, Frank et al teach wherein the coordinator node comprises a longest running node in the plurality of nodes (**column 7, lines 21-27**).

20. As per claim 15, Frank et al teach wherein the method further comprises:

arranging the plurality of nodes in a network ring; forwarding by the coordinator node the proposal message to a first node of the plurality of nodes; and forwarding by the first node to a next node in the network ring (**Fig 3, column 5, lines 31-43**).

21. As per claim 16, Frank et al teach wherein the coordinator node issues the commit message upon receiving the proposal message from a non-initiator node in the ring (**column 5, lines 44-62, column 2,**

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**lines 5-13; once other nodes verify group membership by exchange of messages; group membership is reconciled).**

22. As per claim 17, Frank et al teach wherein upon receiving the commit message a node of the plurality of nodes in the network ring performs the tasks of:

    caching the commit message; forwarding the commit message to a next node in the network ring; upon forwarding the commit message delivering the commit message to each process of a process group on the node (**Fig 3, column 5, lines 31-43; message are sent in a loop from a previous node to a next node. The use of caching is well known when communicating data to another node).**

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Refai whose telephone number is (571)272-3975. The examiner can normally be reached on M-F 8:30 - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ryan Zeender can be reached on (571) 272-6790. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramsey Refai  
April 28, 2008  
/Ramsey Refai/  
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